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Semi-hard or hard cheese with central opening, processes of preparation thereof, as well as cheese mold for carrying out these processes.

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Semi-hard or hard cheese model with a central opening with continuous rind, such as a Gouda model (Figure 1), is made by feeding the curd into a cheese mould (10, 22) provided with a central moulder, (11, 15, 24), which during the feeding and pressing of the curd screens off a central room. The moulder (10, 22) has a fittingly movable upper part (4) which cooperates with the follower or the moulder (10, 22) cooperates with a follower provided with a central opening (14).

In a continuous process the curd is fed into a shaping trough via a feeding pipe (20) provided with a central moulding pipe (21), prepressed with the central room being screened off, whereafter the block of curd is brought into a cheese mould (22) provided with a fixed central moulder (24).

Optionally an upper part (31) with cutting edge may be placed on the central moulder with which when introducing the block of cheese a central piece is cut out.

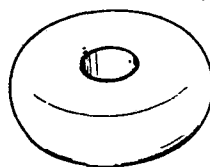


FIG.1

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Semi-hard or hard cheese with central opening, process of preparation thereof, as well as a device and cheese mould to carry out this process.

The invention relates to a semi-hard or hard cheese with central opening, a process of preparing thereof, as well as a cheese mould carrying out this process.

The invention especially relates to semi-hard and hard kinds of cheese, mainly of the type of Gouda cheese, Edam cheese, Kanter cheese and Cheddar cheese. These types of cheese are mostly prepared in a standardized form serving to characterize the relative cheese, which distinguishes itself by fat content of dry matter and moisture content. These standardized shapes are made of flattened or non-flattened round cylindrical models with or without round cheeks and/or rounded edges. These standard forms, which are delivered in a variety of sizes, have the disadvantage that flat pieces of cheese for which there is much demand cannot always be optimally provided and that during the usual cutting it is almost impossible to avoid loss of cheese (off-size pieces). There is also the disadvantage that when selling cheese to the consumer it has to be cut through whole, which causes a strong drying effect, respectively causes the cheese to be unappetizing.

To overcome the former disadvantage the cheese may be made rectangular or square, but in that case the cheese owing to worse aging and irregular salt distribution will not reach such a quality as would be desirable. With round cheese, too, aging takes a relatively long time owing to the less accessibility to the central part. It is now a principal object of the invention to provide a new semi-hard or hard type of cheese through which the above mentioned objections are avoided, which cheese processes a central opening preferably analogous to the circumference with a continuous rind.

It is a further object of the invention to provide a batchwise or continuous process of preparing such a type of cheese, wherein also the advantage of a somewhat quicker aging is utilized. It is another object of the invention to provide an adapted cheese mould with which the new cheese model can be made in a batchwise and continuous manner. The invention provides a batchwise and continuous method for preparing

cheese of the aforementioned type wherein provisions are made such that in the definite cheese mould, wherein the curd is placed and the cheese is given its definite shape, a central opening as desired is present during further treatments.

5 It is an advantage of the invention that without substantial modifications in the preparation of cheese a new semi-hard or hard cheese model is provided, as hereinabove indicated, which in respect of the known standard models offers advantages because there occurs no cutting loss at the grocer, handling by less skilful personnel is possible and
10 the consumers' preference for flatter pieces of cheese is met with. Moreover the cheese can more regularly be cut into flat pieces from the beginning. Finally this cheese lends itself particularly to the continuous packaging of equal portions of cheese to be sold in supermarkets etc. The aging of the cheese will be somewhat accelerated by the possibility
15 of internal aging which is favorable for the consumption rate or storage.

It is observed that crown-like cheeses are known per se. Reference is made to the Swiss patent specifications 106991 and 274827 as well as the French patent specifications 331710 and 806594. However, no semi-hard or hard cheeses of a higher weight class with a continuous rind are made,
20 meant for storage, and equally no provisions are made for compressing the curd introduced.

Thus the invention provides a flattened or non-flattened semi-hard or hard cheese characterized by a central opening, which is preferably uniform with the circumference of the cheese, preferably with rounded
25 edges, which opening possesses a continuous rind. The meaning thereof is that the rind of the total cheese including that of the opening forms a smooth totality.

The invention especially relates to a cylindrical model, such as that of Gouda cheese, Kanter cheese and Cheddar cheese, provided with a
30 central opening which is preferably round.

Said cheese types are marketed in specific standard models. The Gouda model consists of a cylindrical flat form with round sides, the Kanter model of a flat cylinder with rounded edges at one side, and the Cheddar model of a cylindrical form. These models, which are made in various
35 sizes, wherein the height of the cylinder of the Cheddar type is dependent on the height of the cheese mould chosen, are indicated in figures 1-3 of the drawing. The weight classes of the cheese may vary from 0.5 to 25 kg and still heavier. These cheese types as well as the requirements they have to satisfy are further described in the E.E.C. List of

Goods A-Suppl. 19 (1-1-1980), 04.04.

It may be understood that the invention is in principle also applicable to each type of semi-hard or hard, round or elliptical type of cheese which is not exactly conform to the standardized models.

5 It is an essential feature of the invention that the cheese models are distinguished by a continuous transition of the rind of the central open part to the body of the cheese. The edges are preferably rounded and the transition is smooth. The transition may also be rectangular, dependent on the desired model, wherein however the transition of the
10 rind is not interrupted and comparable with that of for example a rectangular solid cheese or the straight transition of a solid Kanter model. The size of the central opening may be varied, the lower limit being determined by the condition that the pieces obtained are as flat as possible, the upper limit being determined by practical considera-
15 tions.

The diameter of the opening is preferably not larger than half the diameter of the cheese of a round model or half the axes of an elliptical model. Usually the value of the ratio lies in the range of about $1/2$ to $1/4$ and is in practice of the order of about $1/3$, which value
20 for an ellipsis as previously mentioned relates to both axes. For such a model the height of the cheese of a Gouda type is about $1/3$ of the diameter.

A rectangular or square piece of cheese which ends in 2 half spheres is also considered an elliptical model, with diameters equal to the
25 sides where the spheres are lying. The same conditions are valid relating to the half spheres which are considered as a whole while the same requirement is valid for the distance of the straight part. For these models it is also preferred that the central elliptical opening is uniform with the circumference of the cheese.

30 For models with a central opening which is not uniform with the circumference of the cheese one may maintain about the same proportions, for example by starting from the circumscribed circle of the rectangular or square central opening, it being understood that always the condition has to be satisfied that sufficiently flat pieces are obtained.

35 The invention thus provides a batch process for preparing a cheese of the aforementioned type wherein in the cheese mould in which the curd is pressed into its definite shape, while the greater part of the residual whey is driven out, provisions are made consisting of one or more central moulders to bring about the final desired shape without

disturbing the further preparation process. Briefly the process is characterized in that during the stage wherein the curd is put in the cheese mould and compressed, one or more porous central moulders are present which screen off the desired central part from the cheese model.

5 Thus in the cheese mould a central, preferably porous, moulder is applied with a circumference adapted to the desired central opening and during the introduction and compression of the curd a central open space is screened off therefor.

Under central moulder is understood a part which centrically fitted in 10 the cheese mould and which during the introduction of the curd and also during subsequent treatment forms a fixed part thereof and screens off a central space for the curd. The central moulder may be a cylindrical part, which may be hollow or not, open at the top or closed, and having a desired cross-section, which is centrically placed and is integral there- 15 with. The central moulder is in itself porous or provided with openings to promote drainage of whey, or over the central moulder a netting is applied, which apart from whey drainage also furthers the formation of rind.

The central moulder has a total effective height which is at least 20 equal to that of the cheese mould.

In one embodiment of the batchwise production of a cheese of the aforementioned type a removable central moulder is used which is preferably open at the top and is combined with a second open cylindrical moulder, which fits in and is movable in the central moulder.

25 The preparation of the cheese model according to the invention experiences difficulties with those types of preparations wherein in the cheese mould a netting material "cheese cloth" must be present necessary to remove the whey and obtain a central moulder made of an inert material provided with small holes, particularly consisting of 30 stainless steel, preferably of the type as designed for the cheese industry, no netting need be present over the walls of the central moulder, by which the procedures are very much simplified. Similar metal materials have already been used for the cheese moulds themselves but appear to have given difficulties because the curd cools off too fast, 35 which causes the rind to close too quickly. It is a further advantage of the invention that by applying a porous central moulder in cases as aforementioned the open cheese model can be prepared without affecting the quality of the cheese. Also the rind formation is not inhibited or affected on the level of the central moulder behind the wall where the

second central moulder is present.

In the embodiment as above described, wherein the central moulder is removable, said moulder cooperates with a second separate moulder, preferably of a similar porous material, which preferably is internally
5 movable in the central moulder. In this embodiment, which offers the advantage of direct applicability in an existing cheese mould, the height of the second central moulder is chosen in such a way that when compressing the curd the upper part of the second moulder remains above the top level of the central moulder to avoid that the pressure would fall
10 away and only on the top level of the central moulder pressure would be exerted. On the other hand the height of the second central moulder together with that of the other moulder need not be greater than the height of the cheese mould in the extended position. The central moulder is porous and of the same type as the central moulder to enable passing
15 of the whey and formation of rind along the face of the first central moulder as well as above the top level thereof and below it. By utilizing the second central moulder the rind formation does not appear to be disturbed. The height of the second moulder will be chosen relative to that of the first moulder in such a way that the second moulder at the
20 desired compression of the curd will not be pressing on the bottom.

It is desirable when introducing the curd into the cheese mould or during compression to keep the central moulder centered during working. One method to realize this is by a centralizing member preferably consisting of a thread or bar which is movable around the edge of the
25 cheese mould and is provided with a central pin with a cross member. This pin is introduced into a central opening of the central moulder and by rotating the strip therein one turn the pin will be fixed. In this way the central moulder cannot be moved out of its central position until the mould is filled with curd. Other methods are also possible, such as by
30 applying a centre pin through a threaded opening in the bottom of the mould. By tightly screwing the centre pin the central moulder will be kept in position.

In a second embodiment the central moulder is fixedly attached to the cheese mould or is integral therewith, the compression of the curd being
35 carried out by the follower, which is provided with a central opening fitting around the fixed central moulder. The invention also relates to a cheese mould applicable to the preparation of cheese, provided with a fixed central moulder as well as a moulder combination which can be removably fitted in a cheese mould as above described.

The materials used for the cheese mould including the follower and the central moulders need not be identical. When using a wooden or plastic cheese mould there should be present a cloth respectively netting between the wall of the mould and the central moulder and below the follower. If the fixed central moulder does not consist of a porous, hollow, partly hollow or solid porous material, the cloth or netting should be placed over the central moulder. The follower with central opening, which as earlier mentioned is provided with a cloth or netting, moves downwards along the cloth or netting at the wall and the circumference of the central moulder during pressing.

The central moulder preferably consists of a porous material, i.e. a material provided with small openings, like plastic or metal or metal alloy suitable for use in the dairy industry, in which case the cloth or netting may be omitted.

In a further embodiment the central moulder along the circumference of the mould may be provided with an upright edge extending to the edge of the mould which latter thus functions as an inner mould, preferably a thin porous metal edge of about one mm thickness fitting completely within the mould. In such a case the cheese cloth or netting in the cheese mould may completely be omitted, the porous edge then functioning as cheese netting. In such a variation the cheese mould itself may consist of any material suitable for cheese mould.

The fixing of the central moulder cooperating with the second moulder may, if needed, be facilitated by inserting in the bottom of the cheese mould a removable part, for example a truncated part, which can only be removed from the cheese mould in an upwards direction. The central moulder may be attached to such a part and taken up in the bottom of the cheese mould, which has the advantage that centralizing measures become superfluous. After use an identical insert may be applied in the opening in the bottom, which makes the cheese mould suitable for the preparation of the usable cheese model.

It is also possible to place the central moulder in the bottom of the cheese mould through a central opening via the bottom part and make provisions to enable the central moulder to move the right distance downwards during the compression step of the curd. For this purpose the cheese mould may for instance be provided with a ringlike edge at the bottom side of the vessel with a height sufficient to accommodate for the downward movement of the central moulder. This ring or otherwise shaped spacer may or may not be attached to the cheese mould or be integral

therewith. This variation is especially suitable for a wooden or plastic cheese mould, of which the cheese netting is provided with a central opening and the porous central moulder consisting of metal or plastic is fillingly inserted in the cheese mould from the bottom part thereof.

- 5 Preferably use is made of a plastic porous material, which is commercially available as Laude material by which the use of netting becomes superfluous.

10 In a preferred embodiment the cheese mould consists of a fixed central moulder cooperating with a follower with a central opening made of a porous plastic as above mentioned. In that case the central moulder is preferably rounded at the transition of the bottom of the cheese mould, the bottom itself also being rounded. The edge of the follower has a counter rounding for the Gouda model which when a Kanter model is desired is missing.

- 15 The invention also comprises a continuous process for preparing cheese wherein use is made of the following system.

In a specifically advantageous embodiment the curd with whey is fed by means of a pump through a column, which column is provided with enlarged perforated sections for draining off the whey. The curd is
20 transported through the column and is resting on a slide-bottom/knife, which after the curd has reached a certain firmness is withdrawn, the column of curd being fed into the dosing cylinder provided with a perforated dosing plate. This dosing plate is movable by means of a pneumatically or hydraulically operated piston, the downward movement being
25 precisely adjusted to the dosing. After the dosing plate (and thus also the curd) has reached its adjusted position the slide-bottom with the knife is moved forwards and a block of curd cut to the right size. This block of curd then rests on the dosing plate, the bottom/knife plate again forming the bottom of the cylindrical column. The dosing plate
30 now moves upwards to prepress the curd to remove a substantial portion of the whey and give firmness to the curd. After the prepressing the dosing plate will move back again and the block of curd in the cylinder is moved sideways in the filling room and introduced into the cheese mould, which is transported for further treatments. This cycle is
35 thereafter repeated.

In a preferred embodiment of the invention the curd is transported through a column provided with a central moulder pipe with the same diameter as the central space to be provided in the cheese, the so shaped curd is moved in the dosing cylinder constructed as a shaping

trough, the dosing plate being provided with a centrally movable piston which screens off the central space of the dosing cylinder corresponding to the central space screened off in the column, the bottom with knife plate is closed after filling the shaping trough while cutting off a
5 dosed piece of curd, next the dosing plate around the central piston is moved upwards in order to prepress the curd, whereafter the dosing plate with central piston is moved downwards to the adjusted lower position, the dosing plate and central piston lying in one face and next the block of curd is moved sideways out of the shaping trough and transported to
10 the filling trough where it is filled into the cheese mould, provided with a central moulder according to the invention, which cheese mould subsequently is subjected to further treatments.

In another embodiment the moulder pipe in the feeding column of the curd is not made in a fixed form but is movable to the level of the
15 bottom-dosing plate to screen off the central space during the filling of the curd into the dosing-shaping trough. After filling of the shaping trough the block of curd is cut by the knife bottom of the feeding column which has the shape of semi-circular knives.

Just as in the other embodiment the block of curd is first prepressed
20 by the upwards moving bottom-dosing plate and after the dosing plate has been returned to the adjusted position the moulder pipe is withdrawn in the curd feeding pipe. After removing the block of curd in the manner as earlier described the cycle may be started again.

In the previous processes was started from a definite type of continuous feeding of the curd. The cheese according to the invention may
25 however be obtained, independent of how the continuous formation of the predetermined block of curd is carried out, by making provisions to remove the central part of the block of curd just before the step of the block of curd being introduced into the cheese mould.

30 In this embodiment an upper part is placed on the central moulder of the cheese mould provided with cutting edges. When introducing the block of curd into the cheese mould by gravity the desired central part of the curd is cut off by means of this upper part, whereafter it will together with the upper part be removed. The upper part is preferably
35 provided with an inwardly movable bottom to press out the cut off central piece, whereafter the upper part is again moved to its position above the central moulder of the cheese mould. In this method, which is applicable to each continuous line, it is however necessary to separately process the cut out pieces.

The invention will now be illustrated by means of the drawing wherein figure 1 is a cheese model of the Gouda-type, figure 2 a Kanter-type and figure 3 a Cheddar-type. Figure 4 shows a cheese model according to the invention in elevation in cut form. Figure 5 shows an embodiment of a central moulder to be inserted in a cheese mould according to the invention. Figure 6 shows in perspective an insert or hollow cylinder which is movable in the central moulder. Figure 7 shows in perspective a cheese mould with fixed central moulder attached to the bottom of the cheese mould. Figure 8 shows the cover of the cheese mould to be used in the embodiment of figure 7, while figure 9 shows in perspective a normal cheese mould. Figure 10 indicating the cover or so-called follower. In figure 11 a variation of the embodiment of figure 7 is illustrated wherein use is made of a porous plastic material owing to which the lining may be omitted. Finally, figure 12 illustrates a continuous preparation process wherein in the feeding pipe of the curd a central pipe is present and in the shaping trough an adjustable central piston, which screens off a central space in the shaping trough.

In figure 4 a cheese model according to the invention is indicated with a central opening 3, wherein the flat pieces to be cut out are shown schematically. The first flat part 2 cut out is indicated separately.

In figures 9 and 10 a normal cheese mould is illustrated, filled with curd from which by pressing the whey is removed. This cheese mould thus determines the shape of the final cheese product, which shape will no longer be subjected to substantial change after turning, trimming, salting etc. The mould may consist of wood, plastic, metal or a combination thereof, and is composed of a cover or follower 4 provided with an upright edge 5, so that during the pressing step no tilting movement can occur because of a non-centrally exerted force. In the follower an inner lining 6 may be present which for some moulds is indispensable. The edge 7 fits around the edge of 4. The follower with inner lining fits in the perforated lining 8, which replaces the cloth used a.o. in wooden cheese moulds. This lining 8 is provided with a ring 9. Without this lining the whey would less easily run off and there would not be formed a good rind by the curd. Lining 8 fits in mould 10 and the follower therein is movable by pressure. The pressure which is exerted on the curd by the follower is usually empirically determined and indicated in terms of the downward movement of the follower.

In figure 5 the central moulder of the invention is illustrated consisting of a cylindrical hollow part 11, attached to or passing into

an edge-shaped bottom 12. It fits totally in the bottom 12. The central moulder thus need not be fixed. Bottom 12 and part 11 consist of an inert material provided with small holes. Before the curd is introduced the second cylindrical central moulder 13 according to figure 6, which is hollow as well, is moved into the central moulder (11) to such an extent that the curd after introduction into the cheese mould is screened off in respect of the central opening of the central moulder. The follower is subsequently applied and pushed in moving the upper moulder downwards into the central moulder and also pressing the curd to a definite selected height. The cheese mould is usually filled to the upper part thereof, while the second moulder is of equal height as the central moulder or somewhat shorter. Cilinder 13 is preferably closed at the upper side. For an elliptical model both central moulders are naturally made in the form of ellipses.

15 In figure 7 and 8 a cheese mould is indicated containing a central moulder affixed thereto. This is at its lower part welded to the cheese mould or connected therewith in a somewhat extended rounded form and preferably not closed at the upper side. The height of the central moulder is at least equal to the height of the cheese mould and after the curd has been introduced into the cheese mould between the wall thereof and the central moulder, the follower as indicated in figure 8 is placed on the cheese mould. This follower is provided with a circular opening 14 of the size of the diameter of the central moulder 15 and is fittingly movable over the central moulder. When exerting pressure the follower will thus be moved downwards to the required level and the central space remains screened off.

The central moulders as mentioned preferably consist of a thin inert metal having a thickness of about 1 millimeter, wherein pores are present. It is also possible to use a porous plastic.

30 In figure 11 a cheese mould is indicated consisting of a plastic porous material as mentioned above as a consequence of which the nettings or linings may be omitted. Thus in this embodiment the liner 6 as shown in figure 10 is absent. The cheese mould is provided with a fixed central moulder, the arrangement being further identical to that of figure 7 and 8.

In figure 12 a continuous embodiment is shown. The curd is fed through feeding pipe 20 wherein a moulding pipe 21 is present, which screens off a central space and may be porous or not. After the curd in opened position of the bottom knife 23 is filled into the shaping trough 22 the curd

is cut off by actuating piston 28, which moves the bottom knife 23. The piston 35 which moves the central moulder 24 has moved the moulder at the beginning of the filling step upwards to the upper level 26 of the shaping trough 22. The curd is introduced along the central moulder 24 into the trough 22 and prepressed by the dosing plate 33 which is actuated by the piston 35, during which the central moulder 24 remains in its position.

Subsequently, both the dosing plate 33 which may move independently of the moulder 24 and, simultaneously or thereafter, the central moulder 24 is moved downwards till they both are at the same level of the bottom plate 33 of the shaping trough 22. By means of piston 27 the trough with the filled curd, which is now open at the top and the bottom, is slid to the left between the pressing plate 34 and the cheese mould 30, and the curd provided with the central opening, which owing to the prepressing step still slightly sticks to the walls of the trough 22, is pushed into the cheese mould 30 by means of said plate 34 which cheese mould contains a fixed central moulder 31 and after being transported is subjected to further treatments not shown. In the drawing 22' indicates the block of curd which is pushed into the cheese mould.

20 Example.

A Gouda cheese was prepared in the usual way, starting from 100 l pasteurized milk, to which rennet and acid agent were added. The milk was curdled after about 30 minutes, whereafter the formed cheese curd was cut, the whey drained off, followed by stirring and draining. These preparation steps are known and need not be further illustrated in detail.

It may be mentioned that the preparation took two hours and that one finally obtained about 10 kg of curd. The curd was filled into the cheese mould, which had a diameter of 30 cm and a height of 15 cm. The curd was introduced to a height of 15 cm whereafter it was pressed during 4 hours by means of a hydraulic press so that it still went down a few cms. Subsequently the formed mass of cheese was removed from the mould.

This shape had the dimensions of the diameter of the cheese mould with a height of 12 cm. After trimming and turning the cheese block was immersed in a brine bath for 3½ days and then stored. After application of a plastic layer around the cheese aging took place on storage racks in the aging room.

The same treatment with the same ingredients was carried out in the cheese mould wherein the central moulder according to the invention was

used. This consisted of an open cylindrical central moulder with a diameter of 15 cm and a height of 15 cm. The central moulder was arranged in the cheese mould whereafter a second cylindrical open moulder with a height of 7 cm was pushed therein to a depth of 1 cm.

5 This moulder like the central moulder had a wall thickness of about 1 mm. The moulders as well as the cheese mould were made of stainless steel especially designed for the dairy industry and provided with small holes. The curd was now introduced into the same cheese mould of which the volume was reduced proportionally to the central space saved. The
10 follower was applied and in the same way as in the first case pressure was exerted till the curd had dropped about 3 cm. The second moulder was also pressed down about 3 cm in the central moulder. The further treatments were identical with those of the first case. The model obtained had a central uniform opening of which on the lateral parts a normal rind was
15 formed. When releasing the cheese from the mould the central moulder and the second moulder were at the same time as the cheese removed from the cheese mould and carried off.

 The cheese with open model according to the invention appeared to possess the advantages as earlier described while a substantial reduction
20 of the aging time could be established.

CLAIMS.

1. Semi-hard or hard cheese model which may be flattened or not, characterized by a central opening with continuous rind.
2. Model according to claim 1, characterized in that the central opening is uniform with the circumference.
- 5 3. Model according to claims 1-2, characterized in that the model is round.
4. Model according to claims 1-3, characterized in that the ratio of the diameter of the outer circumference and the diameter of the central opening is of the order of 1-3 calculated on the central cross section.
- 10 5. Model according to claims 1-4, characterized in that it consists of the Gouda, Kanter or Cheddar type.
6. Process of preparing a semi-hard or hard cheese product of a shape as defined in claims 1-5 by introducing a curd obtained from a milk product into a cheese mould, removing the greater part of the whey by
15 pressing and salting the thus treated curd put in a definite shape and aging it to the definite cheese, characterized in that in the cheese mould a central moulder (11, 13; 15) of an inert material is provided which screens off a central part of the cheese mould corresponding with the opening to be provided in the cheese during pressing and other treat-
20 ment.
7. Process according to claim 6, characterized in that the central moulder is composed of a fixedly attached central part (11) wherein a fittingly movable part (13) is placed.
8. Process according to claim 6, characterized in that the central
25 moulder (15) is fixedly attached to the cheese mould (10) and the follower (4) is provided with an opening (14) in such a way that this may be slid over the central moulder (15) during pressing.
9. Process according to claims 6-8, characterized in that use is made of a cheese mould made of a porous plastic or porous metal.
- 30 10. Process according to claims 6-8, characterized in that the central means consists of a porous metal or porous plastic and is provided with upright edges which fit into the cheese mould and are removable from the mould.
11. Process for the continuous preparation of a cheese according to
35 claims 1-5, characterized in that the curd after preparation is continuously fed through a pipe to a shaping trough, in which predetermined pieces are dosed by means of a dosing cylinder, whereafter the dosed

block of curd is filled into a cheese mould which is carried off and subjected to further treatments, characterized in that the curd is supplied to a feeding pipe (20) with a central moulding pipe (21), by which a central part is screened off; the bottom of the shaping trough (22) acts as a dosing plate (33) which when the shaping trough (22) is filled is moved downwards; in the shaping trough (22) a central moulder (24) is present, made as a movable piston which during filling of the shaping trough is in its upper position and screens off a central space in the shaping trough (22) and which after the shaping trough (22) has been filled and after the curd has been prepressed by the bottom (32) is moved downwards as well as the bottom (32) till these are lying in one face with the dosing plate (33) of the shaping trough (22) in the adjusted dosing position (32), said block of curd after dosing is cut off by the knife bottom (23), which bottom keeps the feeding pipe (20) closed till the following feeding cycle, the block of curd with central opening is slid in a filling trough by means of a sliding device (27) and thence is pressed by a pushingplate (34) into a cheese mould (30) provided with a central moulder (31), which mould is then carried off to the other processing steps.

12. Process for the continuous preparation of a cheese according to claims 1-5, by continuously feeding the curd through a feeding pipe to a shaping trough (22), wherein predetermined blocks are dosed by means of a dosing cylinder, after which the dosed block of curd is carried off to a cheese mould which is transported and subjected to further treatments, characterized in that in the feeding pipe (20) a central moulding pipe (21) is provided which is movable to the level of the bottom dosing plate to screen off a central space during filling of the curd in the shaping trough (22) wherein after filling of the shaping trough (22) the block of curd is cut through by the knife bottom (23) of the feeding column, which bottom has the shape of two semi-circular knives, whereafter the block of curd is prepressed by the upwards moving bottom-dosingplate (33) and after the dosing plate (33) has again been returned to the adjusted lower bottom position (32), the moulder pipe (26) is withdrawn in the feeding pipe (20) and the block of curd carried off and filled into a cheese mould (30) provided with a central moulder (31), which is further transported, whereafter the cycle will start again.

13. Process for the continuous preparation of a cheese according to claims 1-5, characterized in that the curd is supplied through a feeding pipe (20) and dosed into a shaping trough (22), from which

shaping trough after filling a predetermined block of curd is moved out, which block of curd is deposited by gravity in a cheese mould and subjected to further treatments, on which cheese mould a part with cutting edges is present so that on insertion of the block of curd in the cheese
5 mould provided with a central moulder a central part is cut off of the size of the central moulder.

14. Cheese mould provided with a fixed central moulder (15), which is closed at the topside combined with a fitting slideable follower with central opening (14).

10 15. Cheese mould provided with a central moulder (11), which is open at the top side, therein containing a slideable second moulding means (13) closed at the top.

16. Cheese mould according to claims 14-15, characterized in that the central moulder is provided with a bottom edge with upright edge which
15 fits against the cheese mould and consists of a porous hard material of plastic or a metal with a thickness of the order of one mm.

17. Cheese mould according to claims 14 and 15, characterized in that in the bottom of the cheese mould a central opening is present in the form of a seat wherein a removable part is fitting which can only be
20 removed in upward direction from the cheese mould, to which part the central moulder is attached.

18. Cheese mould according to claim 17, characterized in that the central moulder consists of porous metal.

19. Cheese mould according to claims 14 and 15, characterized in that
25 the central moulder is fittingly slideable in a central opening in the bottom of the cheese mould and at the bottom of the cheese mould an annular or otherwise shaped edge is present of a height sufficient to accommodate for the downward movement of the central moulder during compression of the curd.

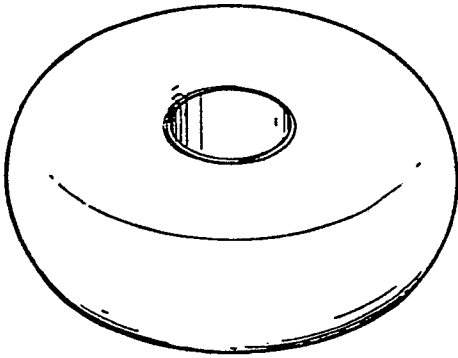


FIG. 1

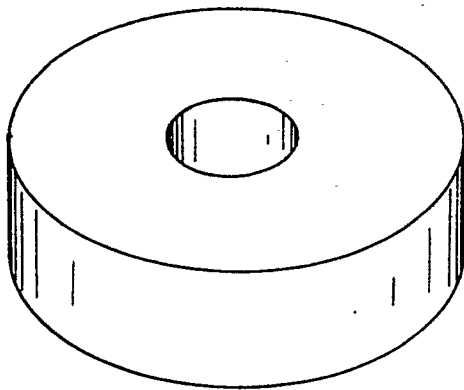


FIG. 2

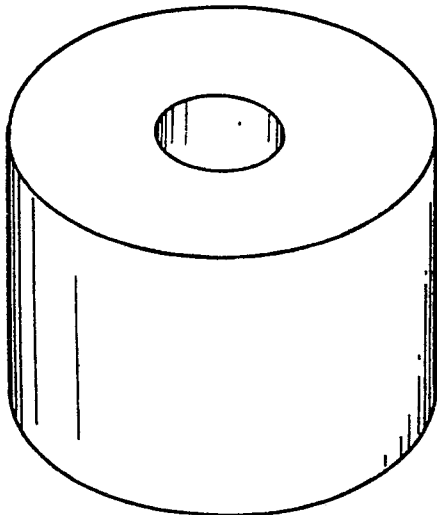
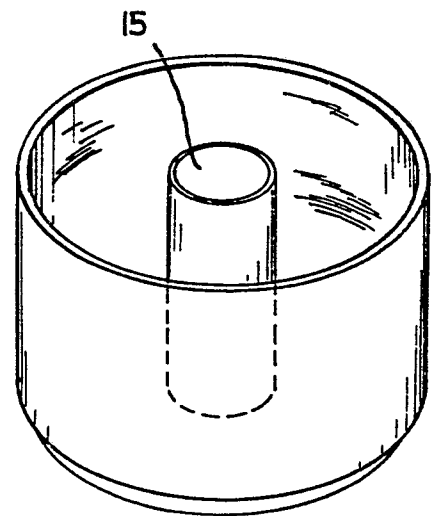
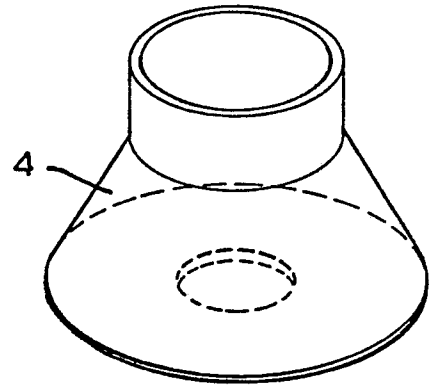


FIG. 3

FIG. 11



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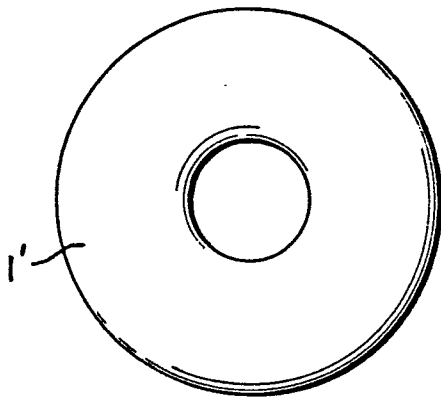


FIG. 4

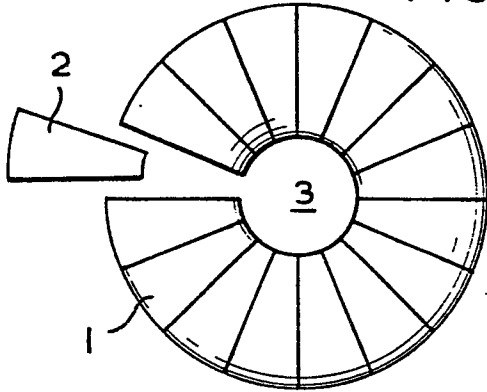


FIG. 7

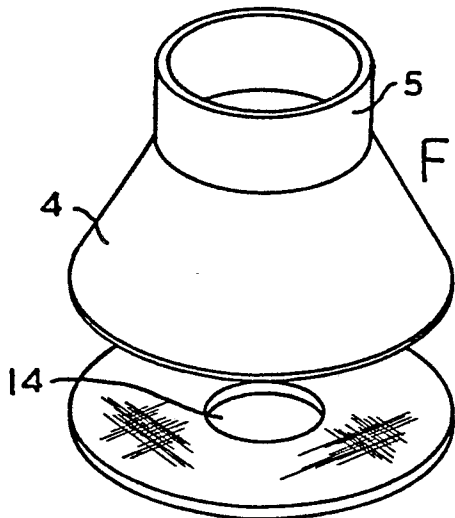


FIG. 8

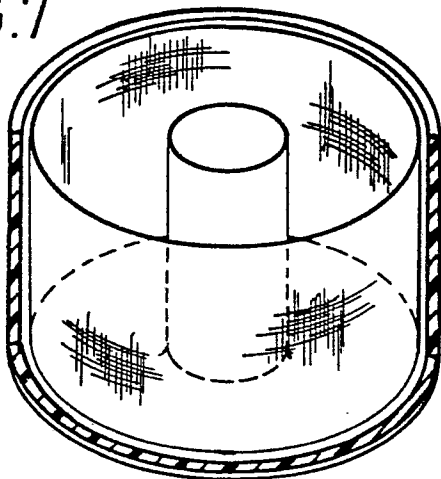


FIG. 9

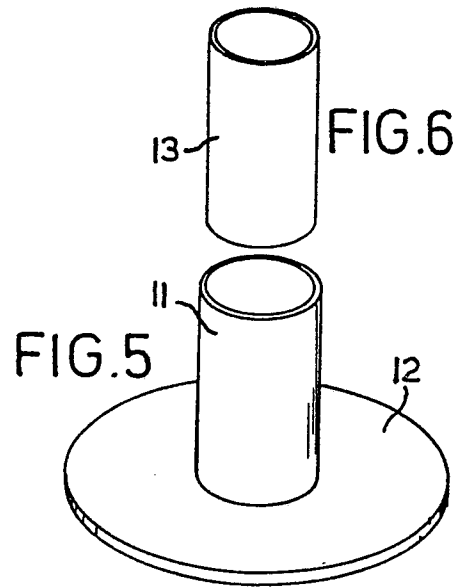


FIG. 5

FIG. 6

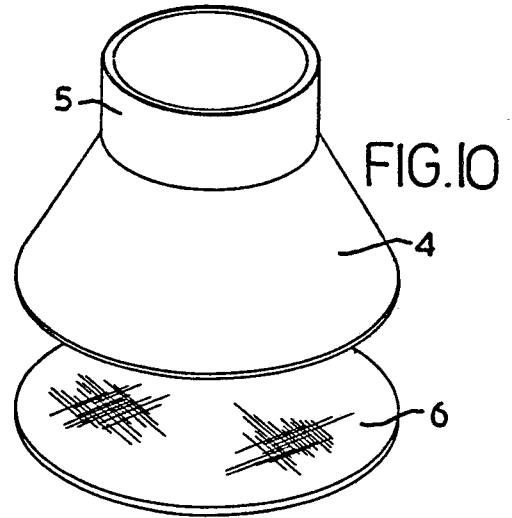
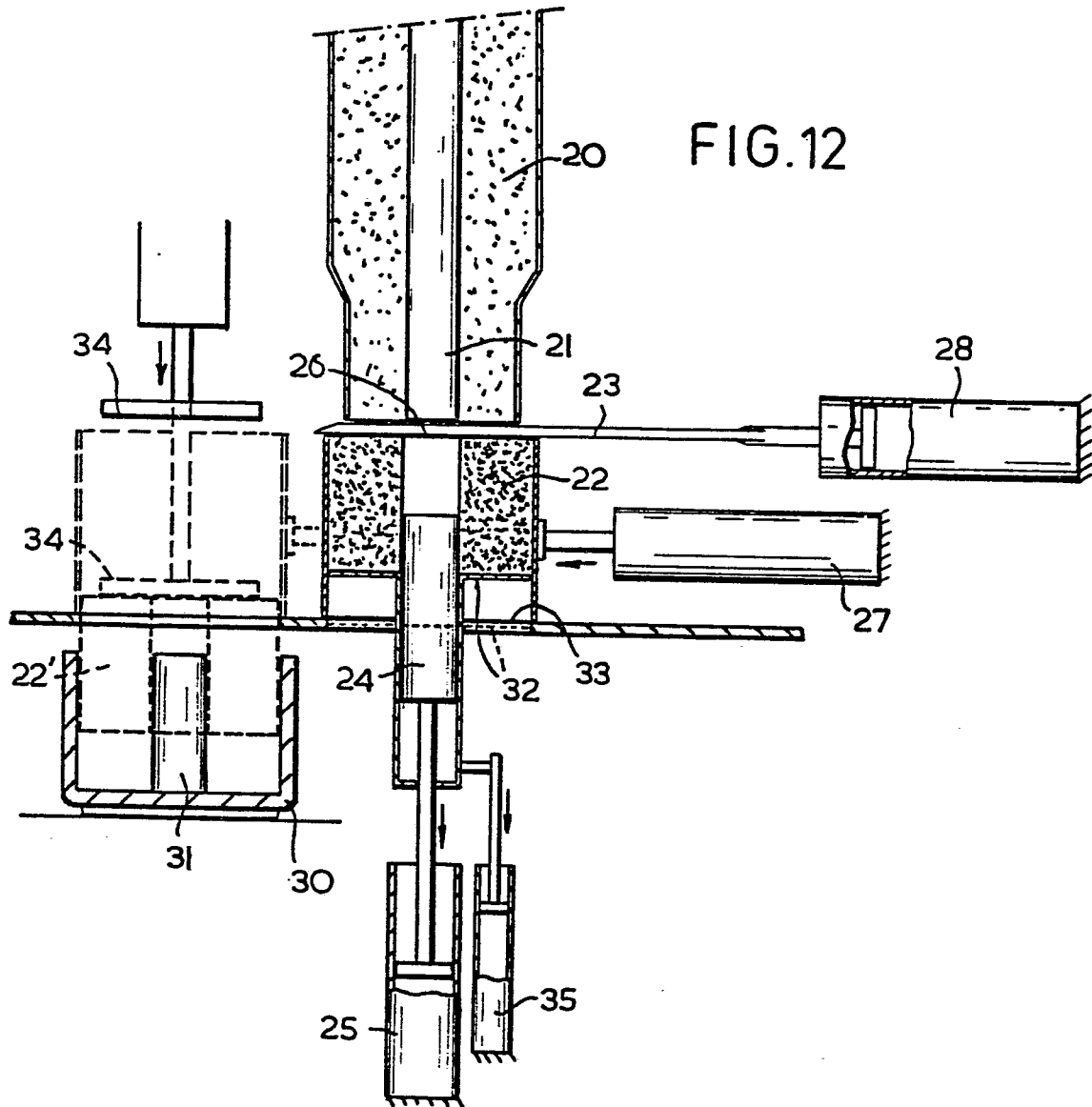


FIG. 10

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FIG. 12





European Patent
Office

EUROPEAN SEARCH REPORT

0052409

Application number

EP 81 20 1269

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	FR - A - 2 050 342 (M. GRENIER, VEUVE BERIOUX, FROMAGERIES GRAND MUROLS) * the whole document * --	1-5	A 01 J 25/12 25/13 25/15
	FR - A - 806 504 (P. BOLOMIER, G. LOBRICHON) * the whole document * --	1-4,6	
	FR - A - 2 305 930 (WINCANTON ENGINEERING LIMITED) * page 4, line 3 - page 8, line 37; figure 1 * --	11-13	
D	CH - A - 106 991 (J. OSTERWALDER) * the whole document * --	1-4, 6-10, 14-18	A 01 J
D	CH - A - 274 827 (J. OSTERWALDER) * the whole document * --	1-4, 6-10, 14-18	
D	FR - A - 331 710 (M.A. VASSEUR FILS) * the whole document * -----	1-4,6	
The present search report has been drawn up for all claims			
Place of search The Hague			Date of completion of the search 26-01-1982
Examiner NEHRDICH			

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

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corresponding document